b) Northern Shrimp in Divisions 3LNO

Advice September 2021 for 2022-2023

Recommendation

No directed fishery in 2022 and 2023 as the stock is below B_{lim} with no indication of short-term recovery.

Management objectives

No explicit management plan or management objectives have been defined by the Commission. Convention General Principles are applied. Advice is based on qualitative evaluation of biomass indices in relation to historic levels and provided in the context of the precautionary approach framework (FC Doc. 04/18).

Convention General Principles	*Status*	*Comment/consideration*
Restore to or maintain at Bmsy	🔴	*Stock below Blim*
Eliminate overfishing	🟢	*No directed fishery*
Apply Precautionary Approach	🟡	*Blim is defined. No fishing mortality reference point defined*
Minimise harmful impacts on living marine resources and ecosystems	🟢	*No directed fishery*
Preserve marine biodiversity	⚪	*Cannot be evaluated*

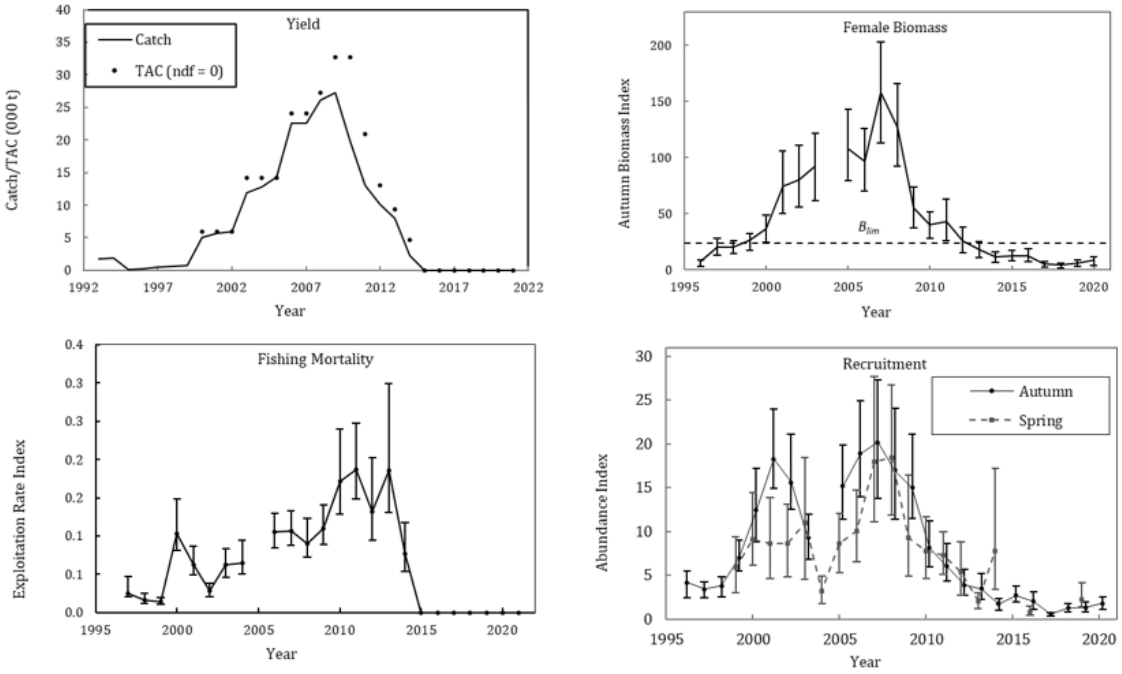
🟢 OK
🟡 Intermediate
🔴 Not accomplished
⚪ Unknown

Management Unit

The stock in Div. 3LNO is assessed and managed as a discrete population (see special comments).

Stock Status

Currently the risk of the stock being below B_{lim} is greater than 95%. There is no indication of improved recruitment.



Reference points

Scientific Council considers that a female survey biomass index of 15% of its maximum observed level provides a proxy for B_{lim} (SCS Doc. 04/12).

Projections:

Quantitative assessment of risk at various catch options is not possible for this stock at this time.

Assessment

Based upon a qualitative evaluation of trends in stock biomass, fishing mortality proxy and recruitment. Input data are research survey indices and fishery catches.

Next full assessment is planned for 2023.

Human impact

Mainly fishery related mortality has been documented. Other sources (e.g. pollution, shipping, oil-industry) are considered minor.

Biological and Environmental Interactions

After reaching record-high conditions in 2010-2011 (warmest conditions since 1980), the bottom temperature in 3LNO had cooled down to near-normal conditions in 2014-2018 and a warming trend has been emerging since. Direct effects of temperature on shrimp distribution, recruitment, growth and survival are poorly understood.

Predation (by cod, Greenland halibut and redfish), low abundance of high energy prey (such as capelin) and environmental factors (including phytoplankton bloom dynamics) appear to be important drivers of the decline of Northern Shrimp in Divs. 2J3KL.

Fishery

The fishery, until 2014, was a directed bottom trawl fishery and there is little or no bycatch of shrimp in other trawl fisheries. The fishery in Div. 3LNO is regulated by quota.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Enacted TAC[1]	13 108	9393	4697	ndf	ndf	ndf	ndf	ndf	ndf	ndf
STATLANT 21	10 099	7919	2282	0	0	0	0	0	0	
NIPAG[2]	10 108	8647	2289	0	0	0	0	0	0	

[1] Includes autonomous TAC as set by Denmark in respect of Faroes and Greenland.

[2] NIPAG catch estimates have been updated using various data sources (see p. 13, SCR. 14/048).

Effects of the fishery on the ecosystem

The fishery was closed to directed fishing beginning in 2015.

Special Comments

Shrimp in Div. 3LNO are genetically distinct from those in Div. 3M and the Gulf of Maine, but not from those further north. Work is ongoing to investigate the contribution of stocks north of Div. 3L to the production of Div. 3LNO shrimp.

Research on transport of larval shrimp indicates that most larvae that originate in Div. 3L are transported out of that division. Additionally, it was found that most recruitment in Div. 3L originates further north of the area. The results of this research have not yet been quantified in order to develop a more comprehensive recruitment index for Div. 3LNO.

Sources of information

http://www.dfo-mpo.gc.ca/Library/352955.pdf